CAUSES OF DELAY IN MALAYSIAN IT PROJECTS

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ABSTRACT

Delay in Information Technology (IT) projects is considered as a problem that frequently happens in most of the places, not to forget Malaysia. The major intention of this study is to identify the causes and effects of delay in IT projects in Malaysia and to propose strategies against delay in IT Projects. A quantitative research design method is used to seek responses from a large number of respondents, thus few sets of questionnaires have been distributed. A total of 66 respondents participated in this survey. Seven most important causes of delay in IT projects in Malaysia were classified, which are: product-related cause, managerial-related cause, personnel-related cause, time-related cause, organization-related cause, cost-related cause and technology-related cause. While the proposed most important strategies against delay in IT projects in Malaysia are: product-related strategy, time-related strategy, personnel-related strategy, managerial-related strategy, organization-related strategy, cost-related strategy and technology-related strategy. The four most important effects of delay in IT projects in Malaysia are: litigation, abandonment, over cost and overtime. Correlation between all causes and effects was established.

ABSTRAK

Kelewatan projek IT dianggap sebagai masalah yang sering berlaku di kebanyakan tempat , tidak lupa juga di Malaysia. Tujuan utama kajian ini adalah untuk mengenal pasti punca-punca dan kesan-kesan kelewatan dalam projek IT di Malaysia, dan juga untuk mencadangkan strategi terhadap kelewatan dalam Projek IT. Satu penyelidikan kaedah reka bentuk kuantitatif digunakan untuk mendapatkan jawapan daripada sebilangan besar responden, dengan itu beberapa set borang soal selidik telah diedarkan . Seramai 66 responden telah mengambil bahagian dalam kajian ini. Tujuh perkara penting dalam kelewatan dalam projek IT di Malaysia telah dikelaskan , iaitu: punca yang berkaitan dengan produk , punca yang berkaitan dengan pengurusan, punca yang berkaitan dengan kakitangan, punca yang berkaitan dengan masa, punca yang berkaitan dengan organisas, punca yang berkaitan dengan kos dan punca yang berkaitan dengan teknologi. Cadangan strategi yang paling penting terhadap kelewatan dalam projek IT di Malaysia pula adalah: strategi yang berkaitan dengan produk , strategi yang berkaitan dengan masa , strategi yang berkaitan dengan kakitangan, strategi yang berkaitan dengan pengurusan, strategi yang berkaitan dengan organisasi, strategi yang berkaitan dengan kos dan strategi yang berkaitan dengan teknologi. Empat kesan paling penting dalam kelewatan dalam projek IT di Malaysia adalah: tindakan undang-undang , pembuangan , peningkatan kos dan kerja lebih masa. Korelasi antara semua sebab-sebab dan kesan-kesan telah dihasilkan.

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LIST OF ABBREVIATIONS

CPM	Critical Path Method
EV	Earned Value
EVM	Earned Value Management
ICT	Information and Computing Technology
IHL	Institutes of Higher Learning
IT	Information Technology
MSC	Multimedia Super Corridor
PV	Planned Value
SPI	Schedule Performance Index
SPSS	Statistical Package for the Social Sciences
SV	Schedule Variance

CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

A project by definition involves an established timeframe to achieve before completion, at the lowest cost, and at the greatest level of functionality. A project that is complete within time and cost, while giving out the best function is very critical for the success of projects. In IT projects, the three success factors that are time, cost and functionality are also known as the Iron Triangle (Ambler, 2006).

If a project fails to meet its time requirements, project delay arises and this is known as schedule slippage. It is well known that IT projects typically slip on their schedules. A delay is basically the change of a project's original stated period at the time of bidding in the contract and its overall actual contract period at the end of the project.

According to Ambler (2006), most IT projects fail because they have set unrealistic goals in terms of the Iron Triangle. Should the possibility of renegotiation of project specifications arise, the development team often then fails to inform the user of the possibility of not meeting the promised Iron Triangle goals.

This chapter will provide general ideas and information of this study. The sections that will be presented in this chapter are problem background, problem statement, research objectives, research questions, research hypothesis, scope, significance of study, and operational definition.

1.2 PROBLEM BACKGROUND

Information Technology (IT) projects have influenced organizations in making investments since the world has realized that investments in IT can create major advantages in a good competitive way in the market. In this era of globalization, influence of IT projects in the market and the surroundings has an effect on production market in so many ways. IT may support an organization by functioning as an enabler or driver of success or an organization may be damaged if IT functions as an inhibitor. In the extreme, positive case, IT can have a transformational effect on a business; IT can change a business in the area of process, product, service, management, and even environment. Regardless of fast developments in technology, the IT industry still makes every effort to develop any IT projects that meet their functionality, timeliness and budget constraints (Ichu and Nemani, 2011). The Information Technology sector is one of the important sectors that aid Malaysia's economic development.

Although the advantages of investing in IT are clear, IT projects are mostly known to have a lot of risks and the projects may be out of control, since they are often difficult to fulfill the projects' justifications in terms of time, cost and scope. The demand of an IT project to be without any errors is still a challenge to the IT industry. For so many years, the IT industry has been afflicted by schedule slippage. Delivering IT projects on time has become increasingly complex and difficult to manage due to the fast evolvement of the software industry, the large application sizes, the unpredictable software activities, and the varieties of software development processes and environments.

Estimating completion dates for information technology projects and bringing them in on time is tricky business. The success of an IT project is determined when an IT project meets its justification, whether the project is according to schedule, within

budget and according to its specification (Thorp, 2001). In 2003, Hackett Group reported that the completion time for IT projects have time overruns ranging between 24 and 100 percent (Perks, 2003).

1.3 PROBLEM STATEMENT

In this day and age, competition between companies has increased worldwide and clients want projects that are at the highest quality and have the shortest time. Completing projects on time is an important issue in IT companies. If the clients are not getting the project delivered on time, other companies might start that project before that. By this, the delayed project will not be successful. Project sponsors will encounter more strict procedure in approving the justifications that need them to ensure IT projects stay on track to satisfy the defined schedule, cost and functionality.

According to Imamoglu and Gozlu (2008) there are around 20 per cent of IT projects have been abandoned before their completion date and less than a third IT projects were completed according to schedule, budget, and functions. It is vital to find solutions for this issue. Delay denotes that there is a loss of earnings as claimed by the and for the owner or consumer (Haseeb et al., 2011).

Since delay in IT projects is counted as a problem that frequently happens, there is a need to do further exploration on what are the major causes that can lead to delays in IT project schedule which ultimately results loss in projects' profitability, thus finding the strategies that can be implemented to minimize delay in IT projects.

1.4 RESEARCH OBJECTIVES

The objectives of the research are:

1. To identify the causes of delay in IT projects in Malaysia.
2. To propose strategies against delay in IT projects.
3. To identify the effects of delay in IT projects.

1.5 RESEARCH QUESTIONS

This research is carried out to seek answers for:

1. What are the causes of delay in IT projects in Malaysia?
2. How to eliminate delays in IT projects?
3. What are the effects of delay in IT projects?

1.6 RESEARCH HYPOTHESIS

Based on the research questions the study works out on the following hypothesis:

H1 : There is a positive correlation between the causes and effects of delay in IT projects.

1.7 SCOPE

The population of this study refers to all MSC Malaysia status companies. They were chosen based on the availability of data from the online databases. MSC Companies Directory (accessible online at http://www.mscmalaysia.my/status_company) was used as reference for the sampling frame of the study. The online database helps in providing the companies' addresses in order for the survey to be sent.

According to the MSC Malaysia info, there are 2375 companies, which are categorized into 4 clusters that are creative multimedia, IHLs and incubators, InfoTech, and shared services outsourcing. According to Saunders et al. (2007), for a population of around 2000, the appropriate sample is 100. Thus, for a population of 2375 companies, a total of 100 companies were chosen to participate in this study.

1.8 SIGNIFICANCE OF STUDY

This study will enlighten people about the issues that cause the delay of IT projects and its strategies to reduce the occurrence of project delay. Although there are a few researches have been conducted to identify the reason behind the delay of projects, but the discovered results were unsatisfying. Besides, IT projects in Malaysia have no established guidelines related to this scenario. This study will also provide the effect of delay in IT projects.

1.9 OPERATIONAL DEFINITION

Projects that are delayed or behind schedule can be defined when SV<0 and SPI<1

Schedule variance (SV = EV−PV)
Schedule performance index (SPI = EV/ PV)

1.10 CONCLUSION

This chapter highlighted general ideas and information of this study that comprises problem background, problem statement, research objectives, research questions, research hypothesis, scope, significance of study, and operational definition.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

A review is performed to identify studies relevant to this topic. Chapter 2 discusses the distribution of four major sections, which are, definition of IT projects, project delay in IT, causes of delay, strategies to overcome project delay in IT projects, effects of delay in IT projects and theoretical framework.

2.2 IT PROJECTS

IT is the term that stands for Information Technology. Information Technology is the technology that is related to computing, software and networking that processes, stores and distributes data. Information Technology is widely used among people for different reasons such as communications, problem solving and economy. Projects that involve IT are now becoming one of the most complex types of project. According to Al-Ahmad et al. (2009), IT projects are synonym with failure for the last few years.

2.2.1 Software development project

Software consists of computer-readable object code that cannot be defined and interpreted by humans. It is created with programming languages, and associated utilities. According to Forselius (2005), there are 7 types of software development software:

1. **Customer specific new development project:**
   Creates completely new customer specific software.
2. **Software product new development project:**
   Creates a new software product that is always developed to be used by more than one customer. A software product may be either an independent packaged software or embedded part of any other product.
3. **Software version enhancement project:**
   Creates a new version of existing software. The existing software may be either customer specific software or a software product.
4. **ICT service development project:**
   Creates a contract-based continuous or temporary ICT service. The service may be, for example, either software or hardware related, and consists of maintenance, support, help desk, or operating service.
5. **Package software configuration project:**
   Result is installed, parameterized and, user configured software package.
6. **Data conversion project:**
   Data is moved from persistent data storage of one information system to persistent data storage of another information system.
7. **Software integration development project:**
   Creates software that provides interfaces services between two or more information systems.

2.3 PROJECT DELAY IN IT

Delays are always measured as expensive to all parties concerned in the projects and very often it will result in clash, claims, total desertion and much difficult for the feasibility and it slows the growth of information technology sector. About 20 per cent of the IT projects have been canceled before completion and less than a third completed on time, on budget, and with expected functionality.

Project delay arises if a project fails to meet its schedule requirements, this is known as schedule slippage. It is well known that IT projects typically slip on their schedules. Time is money. With forecasts, it is always important to identify and address

issues that can cause delays. In most conditions, the original predictions reasonably merge with actual performance. However, some delays may be unforeseen or unavoidable regardless of the best management practices. Delays could be due to lack of test tools, low response from clients, scope creep and inappropriate management in allocating resources.

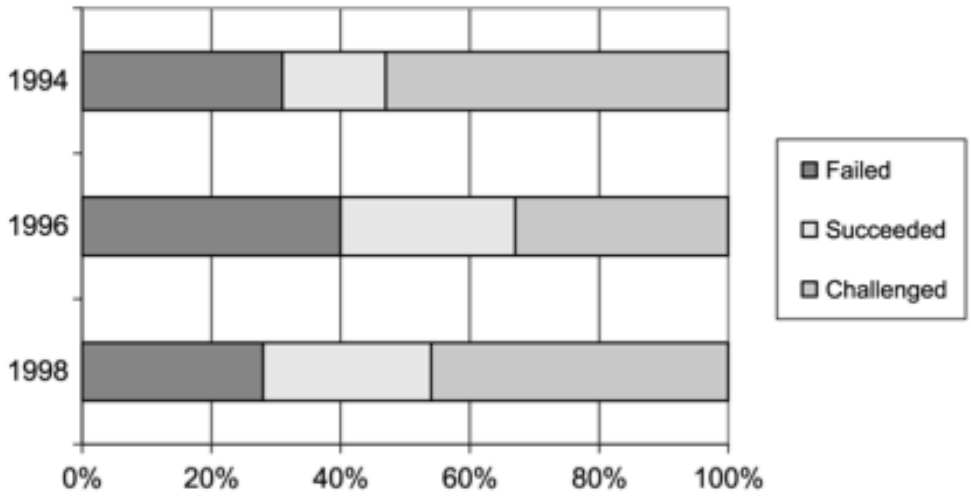

Figure 2.1 : Bar chart showing project failure, success and challenge.

Source: Chulkov and Desai (2005)

2.4 CAUSES OF DELAY

Collofello et al. (2000) suggested that all IT projects in an organization need technology, which enables the projects to be developed upon, product, which is the project that is to be developed, personnel, which is the development team to run the wok, management, the people in charge of running the project, and organization, which is the atmosphere where the projects are conducted.

The causes are classified into seven causes, which are technology-related causes, product-related causes, personnel-related causes, managerial-related causes, organization-related causes, time-related causes and cost-related causes.

2.4.1 Technology-related causes

Failure rate for IT projects are very high among all industries. Murray (2006) stated that IT projects frequently end in disappointment. Business and technology executives are displeased with their ability to accurately estimate project schedules. On-time delivery is an important intention for the all industries, especially in technology. Yet, the information technology industry continues to be overwhelmed by schedule slippage. This is because producing software on time has become increasingly complex and difficult to manage due to the fast evolvement of the software industry, the large application sizes and the varieties of software development processes and environment, the complexity and intangibility of software. Today, most of the causes that are related to technology are due to development and test tools instruments are behind time or unavailable (Collofello et al., 2000). Fong et al. (2000) also agreed that the reason of schedule slippage is because of technological obsolescence. Late deliveries and late data were the most commonly reported causes of schedule delays associated with inputs to the development process. Late deliveries of hardware, software and major equipment items were frequently identified as late inputs to the development stage. Late data, generally in the form of interface data or customer data was also a common reason for delay. Grant et al., (2003) indicated that it is also worth noting that the activities impacted by these delays in the development stage include the preparation of technical manuals, provisioning, logistic support planning and training.

The fast developments in technology demand high attention to change order process to deal with technological changes. Fong et al. (2000) proposed that improvements in technology and performance affect the schedule of a project. New technologies are difficult to use or predict. Occasionally adopting different kind of technology might cause a project to fail, although it has been verified, using the technology for a first trial is considered risky.

2.4.2 Product-related causes

Change in project requirements and change in project design and implementation will become a major problem in projects if they are continuously

changing. The continuous changing requirements can affect the cost, schedule and quality of an IT project. Inability to manage the changing requirements may lead failure of the project. Khan et al. (2012) proposed that the impact of a particular change in requirements propagates from one phase of the project development life cycle to another phase. If the feedback from early phase is delayed, this may cause the next phase will also be delayed causing the entire project to be delayed.

One of the causes of delay that is related to product is a late requirement. Some of the customers may not be as responsive to the requirements and design. They need time to digest what the project managers have given to them. The customers may have questions for clarification or they may want to get feedback from others. All of this adds to the quality of the final solution, but it does insert delays into the project (Cotterel and Hughes, 2006). Customers are not always conscious of that they are expected to make a considerable contribution to the realization of a project. When customers do not react on time to areas in which they must be involved, projects can come to a stop. There may be case that the team proceeds on the project without discussing with the customer, which will lead to conflicts between them later on.

Poor design will also cause delays in IT projects. The poor awareness of designs leads to delays, as it requires many revisions at later stages. What the customer wants should be clearly documented and keep in mind that what the project manager believes the customer wants is sometimes different than what the customer believes they've asked for. The customers change their minds according to the importance of the requirements to them, especially once they know the budget and schedule consequences (Firesmith, 2004).

It's problematic if the stakeholders assume that every party will get everything that they want. If so, there will be arguments with each other by their differences preferably than undergoing argument resolution at the beginning of the project. The IT developers will reveal the stakeholders' conflicting differences because programmers are not able to generate an ambiguous system.

2.4.3 Managerial-related causes

Collofello et al. (2000) suggested that over optimistic planning in managing IT projects is one of the causes of schedule slippage. Being too confident in the schedule planning place significant pressure on the project team. The team will initially attempt to reach unrealistic deadlines. These kinds of efforts lead to work that has so many slacks and fallacy, which will cause additional extension on the project. The need to complete a project as soon as possible sometimes result from for primarily strategic reasons which is if it is not feasible, however, it should not be undertaken. The project will not proceed more quickly and the product will then damage.

Unplanned activities in projects may also cause projects to be delayed (Collofello et al., 2000). The occurrence of an unplanned activity may cause other activities to be delayed. Under resource constraints, the delays are due to the resource usage by the unplanned activity or activity that requires a new order of activities to adjust additional predecessor constraints (Archer, 2008).

Weak project leadership cause project delays. Kumar (2000) found that failure was connected to the organizational context and could attribute to the low leadership skills, organizational culture, the lack of integration, and the poor of commitment by senior management. Leadership will have an impact on corporate culture, project culture, strategy for a project, and project team commitment (Shore, 2005). It also affects systems design and development, software selection, implementation, and maintenance. Without appropriate leadership, the risk of project disappointment will increase (Shore, 2005).

One of the causes of delay that is related to managerial is sinking team spirit. Sinking team spirit will affect productivity and efficiency of a project, thus causing delays to the entire project. According to McDonald and Zack (2004), productivity is the measurement of productivity of people to complete the required job. This occurs due to acceleration of the schedule and also the pressure to complete the work. In addition, delays caused by IT mistakes will need rework and this leads to a significant increase in

the amount of work the laborers are required to complete. This directly reduces the productivity and efficiency of the team.

Next, communication problems will also cause delay in IT projects. Poor communication decreases the ability of the project members to be alert of the activities of the people working on other departments, and leads towards coordination breakdown, integration problems and, eventually, defects in the system under development, hence, increasing the project development time. As the complexity and size of software increases, the necessity for informal communication increases too (Cataldo and Herbsleb, 2008).

Project scope should not be underestimated. Scope is the term that defines the entire justifications that is required at the end of a project to deliver products and services with stated functions. Therefore, logically, it can be said that all project plans, estimation, schedule and base lines are usually designed base in the initial project scope. Thus, any change in the project scope during execution will mean that the entire initial project plan will have to be reviewed such that schedule will have to be developed. This means more time and resources will be needed as against the initial baseline. Another way scope errors could lead to delay could be seen in the fact that project scope estimations are done base on the produced designs, as such, having errors in design in a form of oversight or misrepresentation that will lead to extra works and change order (Ambituuni, 2011). Scope creep is the uncontrolled and unexpected changes in user expectations and requirements as a project progress. Thus will result in project delay and cost overrun.

2.4.4 Organization-related causes

One of the causes of delay that is related to organization is change in economic environments. Economic inflation results to a progressive increase in the prices of resources needed as the input for the projects. Because the project parties have no control over this factor, they can only minimize delays in the project so that cost overruns due to this factor are minimized, since inflation is a time bound factor (Apolot et al., 2011).